**Unit Title: Grade 9 – Linear Relationships and Modeling**

**Organizing Concept: Creating and Reasoning with Equations and Inequalities**

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| **Questions to Assess Prior Knowledge:**  **#1: Graphing Linear Equations**  **Graph using slope and y-intercept y = 2x + 3**  **Graph using a table y = -2x – 4**  **#2: Understanding a graph**  **Using the given graph, explain what you know. Be sure to include at least 3 specific points and what they mean to this specific graph, describe the scale on each axis and create a title.**  **#3 -** PAS Strategy with a Pre-Assessment   * + The PAS Strategy is a literacy tool that helps students preview the text, access prior knowledge, and set the purpose.   + The PAS Strategy can be used for any type of text, but it works so great with pre-tests.   + Use the attached form with a pre-test to assess prior knowledge and set the purpose with key vocabulary and ideas for the unit. [PAS Strategy for Pre-Tests](file:///C:\Documents%20and%20Settings\Owner\Desktop\PAS_for%20Pre%20Test.pdf) |
| **Questions to Draw-out Misconceptions:**  **Misconception #1: The method the student is best at (ie graphing or elimination) is THE ONLY way to solve.**  **Questions: Have a variety of systems listed, have students explain how to solve each one. They have to use each method at least one time.** |
| **DOK 1:**   1. **State the different methods for solving systems of equations.** 2. **Given the following systems of equations, state which method would be BEST to use to solve.**     2x + 3y = 8  4x – 5y = -6     1. Solve each of the systems from #2 using the specified method. 2. Graph the inequality in a coordinate plane.      1. **5.** 2. Graph the following system:   x > 2  x ≤ 6  y ≤ 8  y>1   1. 7. Solve the system of inequalities |
| **DOK 2:**   1. Explain how you determine if a given point is the solution to the system. 2. Compare and contrast the solution(s) to a system of equations versus a system of inequalities. 3. Label the number of solutions for each visual representation of the system: |
| **DOK 3:**   1. Justify why there can be a solution on a line for a system of equations, but why there may not be a solution on a line for a system of inequalities. 2. Prove that the solution to a system will work in the original system and a multiple of the system. 3. Explain your thinking about the number of solutions possible for a system of equations versus a system of inequalities. |
| **DOK:4**   1. Create your own system of equations, solve, and prove that your solution is viable. 2. Design your own system of inequalities, list three different solutions, and explain why many solutions are possible. 3. Given the linear programming situation and constraints, graph the system of inequalities and explain what the feasible region (shaded region) means to this situation.   Jim wants to earn at least $200 per week. He can earn $10 an hour as a lifeguard and $8 an hour working at Cold Stone. His mom told him he could work at most 30 hours per week.  x = Number of hours as a lifeguard  y =Number of hours at Cold Stone  x + y ≤ 30  $10x + $8y ≥ $200 |
| **Literacy – Writing to Learn:**   1. The tricky parts of graphing linear inequalities are… 2. The big difference between a system of equations and a system of inequalities is… 3. A solution to a problem is finite when\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but infinite when\_\_\_\_\_\_\_\_\_\_\_\_\_. 4. A line can be used to make predictions because… 5. Three ways to solve a system of equations are\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_. My favorite method to use is\_\_\_\_\_\_\_\_\_\_\_\_ because…   However, all of the different methods are important to know because…   1. A mentor text on solving linear systems of inequalities through linear programming would be a great way to get students to SEE how to solve and describe the solution. |